

# Personal Protective Equipment

## BICSL

الإدارة العامة لمكافحة عدوى المنشآت الصحية

General Directorate of Infection Prevention and Control  
in Healthcare Facilities



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# OBJECTIVES

**By the end of this component, the employee able to:**

- Identify which is the PPE.
- Identify the different types of PPE types and indications of use for each type.
- Demonstrate PPE correct sequences and technique for donning and doffing of PPE.
- Identify the correct PPE disposal.
- Identify the safe principles of extended and re-use of N95 respirator.



# Personal Protective Equipment

**“specialized clothing or equipment worn by an employee for protection against infectious materials” (OSHA, 2014).**



# PPE Used in Healthcare Settings



Gowns/aprons



Surgical Masks



Face  
shields

Kimberly-Clark



Gloves

BICSL



M  
rs (N95)

**Goggles**

# Powered Air-Purifying Respirator (PAPR)





# How to Select your PPE

- ☐ **Type of exposure anticipated.**
  - **Splash/spray versus touch.**
  - **Category of isolation precautions.**
- ☐ **Durability and appropriateness for the task.**
- ☐ **Fit.**





# Personal Protective Equipment (PPE)

## 1. Gown



# Gown

## General indications for use of gowns

- a. Protect from the contamination of clothing with potentially infectious material.
- b. Gowns should be worn as part of Standards Precautions or Contact Precautions.

### Types:

- a. Clean /Isolation gown: used for isolation.
- b. Sterile gown: used for performing invasive procedures, such as inserting a central line.

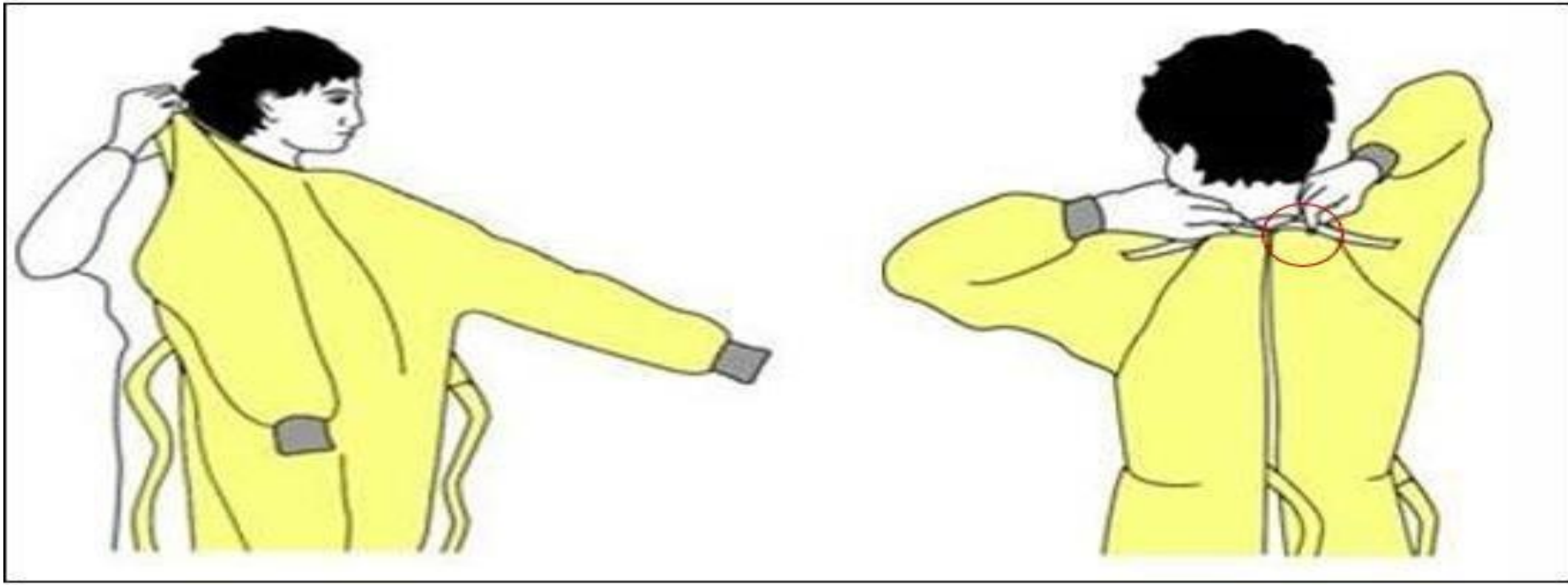
# Gowns

## How to put on a Gown

- Select appropriate type and size.
- Opening is in the back
- Secure at neck and waist
- If gown is too small, use two
  - ☐ gowns Gown #1 ties in front
  - ☐ Gown #2 ties in back

# Gowns

## How to put on a Gown



**Figure 6:** How to put on a gown (CDC, 2014).

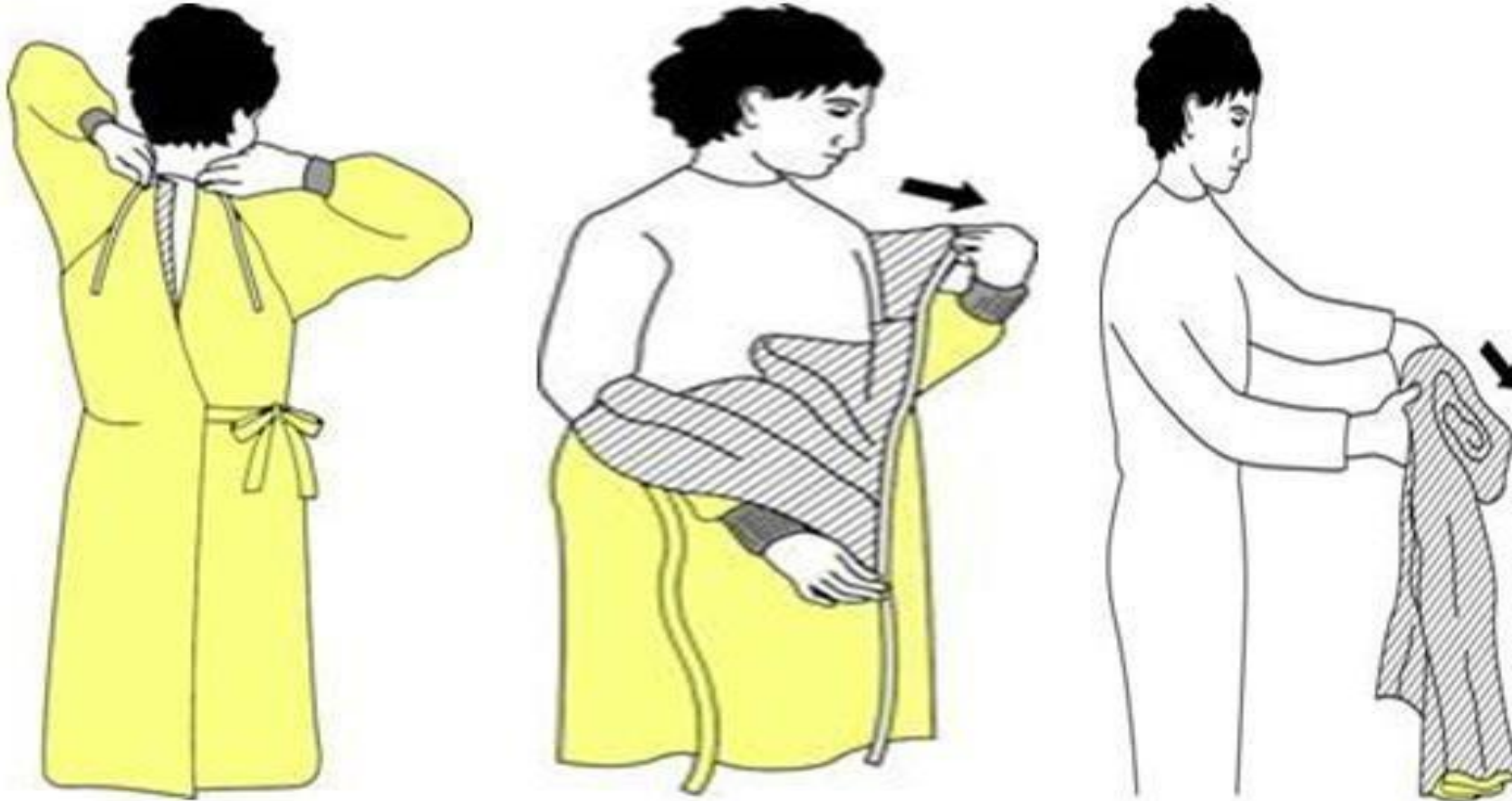
# Gowns

## How to Remove Isolation Gown

- Unfasten ties.
- Peel gown away from neck and shoulder.
- Turn contaminated outside toward the inside.
- Fold or roll into a bundle.
- Discard.
- If contaminated perform hand hygiene.

# Gowns

## How to Remove Isolation Gown:





## Personal Protective Equipment (PPE)

# 2. Surgical mask

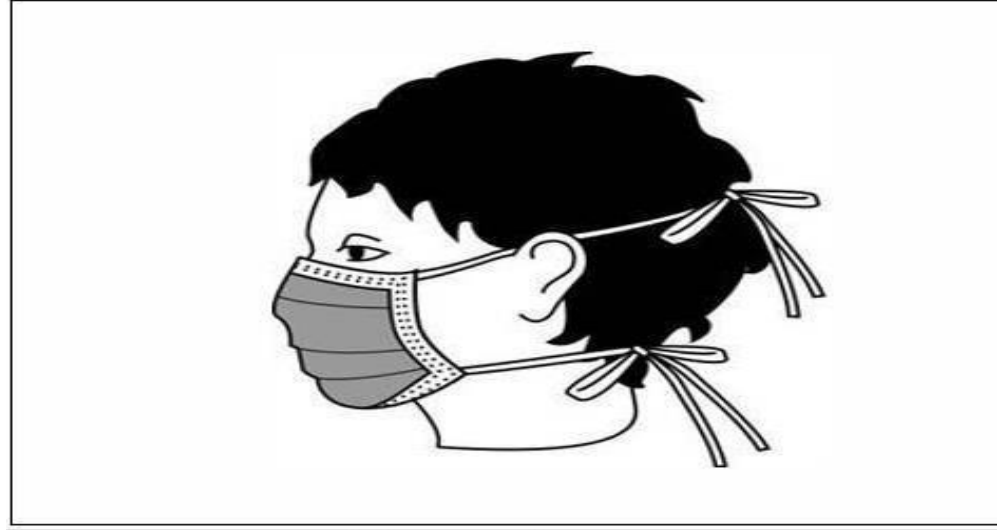
### Indications:

- a. Surgical masks: protect nose and mouth from exposure to respiratory secretions and sprays of blood or body fluids.
- b. Surgical masks should be worn as part of **Standard Precautions**  
or **Droplet Precautions.**

## How to put on a Mask:

- Place over nose, mouth and chin.
- Fit flexible nosepiece over Nose Bridge.
- Secure on head with ties or elastic.

- Adjust to fit.



**Figure 7:** How to put mask (CDC, 2014)

## How to removing on a Mask

### Removing a Mask :

- The front of the mask is considered contaminated and should not be touched.
- Remove by handling only the ties or elastic bands starting with the bottom then top tie or band.
- Lift the mask away from the face and discard it into the designated waste container.
- If contaminated perform hand hygiene.

## **How to Remove a Particulate Respirator:**

- Lift the bottom elastic over your headfirst.
- Then lift off the top elastic.
- Discard.

- If contaminated perform hand hygiene.



# N95 Respirator

## Respirator or N95 mask

### Indications:

- a. N95 respirators reduce the wearer's exposure to airborne particles, from small particle aerosols to large droplets. These respirators filter out **at least 95%** of very small (0.3 micron) particles.
- b. Respirators should be worn as part of Airborne Precautions.

### Instructions for N95 respirator use

- a. Fit testing must be done before using a respirator in the workplace.



## Respirator or N95 mask

- b. Achieving an adequate seal to the face is essential. Conduct a user seal check each time the respirator is used.

# Respirator or N95 mask

## How to put on a Particulate Respirator (*see Figure 8*)

- Select a fit tested respirator
- (Advise against) Put on respirator under the veil or disposable veil
- Place over nose, mouth and chin
- Fit flexible nose piece over nose bridge
- Secure on head with elastic Adjust to fit
- Perform a user seal check
  - \***Inhale:** respirator should collapse
  - \***Exhale:** check for leakage around face.

# Respirator or N95 mask

## How to put on a Particulate Respirator ( Figure 8)



Position the respirator in your hands with the nose piece at your fingertips..



Cup the respirator in your hand allowing the headbands to hang below your hand. Hold the respirator under your chin with the nosepiece up.



The top strap (on single or double strap respirators) goes over and rests at the top back of your head. The bottom strap is positioned around the neck and below the ears. Do not crisscross straps.



Place your fingertips from both hands at the top of the metal nose clip (if present). Slide fingertips down both sides of the metal strip to mold the nose area to the shape of your nose.

# Respirator or N95 mask

## User Seal Checking (formerly known as Fit Check)



1  
Place both hands over the respirator, take a quick breath in to check whether the respirator seals tightly to the face.



2  
Place both hands completely over the respirator and exhale. If you feel leakage, there is not a proper seal.



3  
If air leaks around the nose, readjust the nosepiece as described. If air leaks at the mask edges, re-adjust the straps along the sides of your head until a proper seal is achieved.



4  
If you cannot achieve a proper seal due to air leakage, ask for help or try a different size or model.

## DON'T FORGET



### Fit test

- Used to find the suitable size of N95 mask for the health care provider.
- For bearded personals, the Power Air Purifying Respirator (PAPR) must be used.

### Seal test



- To ensure the N95 mask is fitted and there no air leakage.

# Respirator or N95 mask

## How to Remove a Particulate Respirator :

- Lift the bottom elastic over your headfirst.



## **Respirator or N95 mask**

- **Then lift off the top elastic.**

- **Discard.**

## **Respirator or N95 mask**

- If contaminated perform hand hygiene.**



Type of PPE	Measure	Description
Respirator - N 95	Extended use (for using with multiple patients)	Use without removal for up to 6 hours, when caring for a cohort of patients with COVID-19.

## Extended use of N95 mask

- Extended use refers to the practice of wearing the same N95 respirator for repeated healthcare activities with several patients, without removing the respirator between patient healthcare activities.
- Extended use should be in one care area (ward or department) with multiple patients infected with the same respiratory pathogen for **only one Shift (8 hours' maximum)**.
- Extended use is favored over reuse because it is expected to involve less touching of the respirator and therefore less risk of contact transmission.

## Limited re-use of N95 mask

- Reuse refers to the practice of using the same N95 respirator for multiple encounters with patients but removing it ('doffing') after each encounter.
- The mask is used by one wearer and discard it after **5 times at most or according to manufacturer' instructions.**
- Keep respirator in a paper bag that can be closed without bending.  
Label containers used for storing respirators to reduce accidental usage of another person's respirator.

# Respirator or N95 mask

## General instructions

1. Clean hands with soap and water or an alcohol-based hand sanitizer before and after touching or adjusting the respirator.
2. Discard N95 respirators following use during aerosol generating procedures.
3. Discard N95 respirators contaminated with blood, respiratory or nasal secretions, or other bodily fluids from patients.
4. Discard N95 respirators following close contact with, or exit from, the care area of

any patient co-infected with an infectious disease requiring contact precautions.

5. Consider use a disposable face shield over an N95 respirator and/or other steps (e.g., masking patients, use of engineering controls) to reduce surface contamination.

# Face Protection

**A. Goggles**

**B. Face shield**

**Personal glasses not a substitute for goggles**

# Goggles



## Indications:

### - Goggles:

Protect only eyes from splashes of blood or body fluids.

## How to Put on Eye Protection

- Position goggles over eyes and secure to the head using the ear pieces or headband.

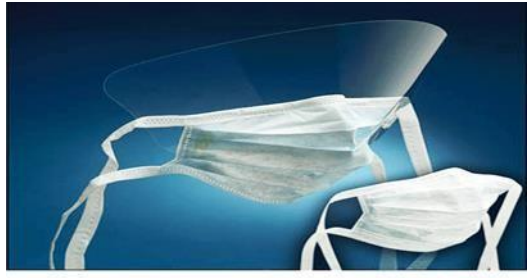


## How to Remove Goggles or Face shield:

- Using ungloved hands, grasp the “clean” ear or head pieces and lift away from face.
- If goggle or face shield are reusable, place them in a designated container for later reprocessing. Otherwise, discard them in the waste container. If contaminated perform hand hygiene.







Kalimed  
Medikal



# Face shield



# Face shields

## Indications:

### - Face shields:

Protect face, nose, mouth, and eyes when there is a risk of exposure to splashes and body fluids.

# Face Protection

## How-to Put-on Face Protection

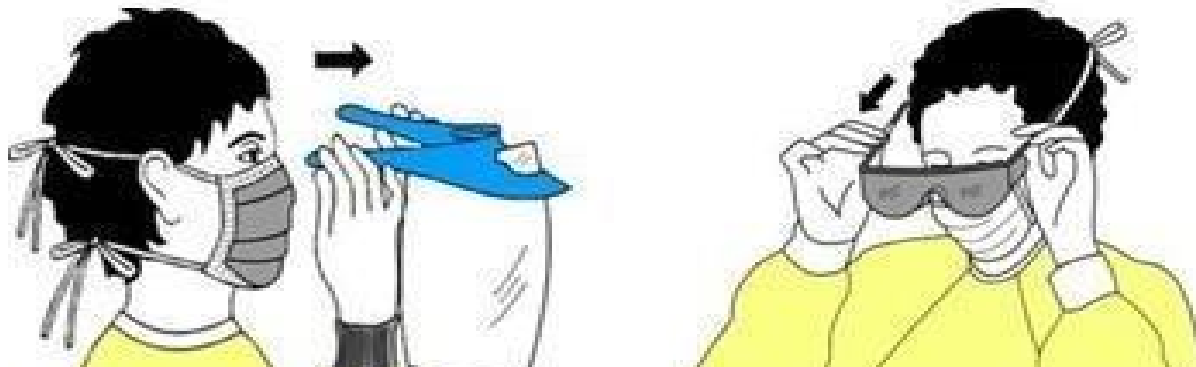
- Position face shield over face and secure on brow with headband.
- Adjust to fit comfortably.



# Goggles

## How to Remove Goggles or Face Shield :

- Using ungloved hands, grasp the “clean” ear or head pieces and lift away from face.
- If goggle or face shield are reusable, place them in a designated container for later reprocessing. Otherwise, discard them in the waste container. If contaminated perform hand hygiene



# Instructions for use of Goggles/Face shields

- a) Extended use of eye protection can be applied to disposable and reusable devices.
- b) Eye protection should be removed and reprocessed if it becomes visibly soiled or difficult to see through.
- c) If a disposable face shield is reprocessed, it should be dedicated to one HCW.
- d) Eye protection should be discarded if damaged (e.g., face shield can no longer fasten securely to the provider, if visibility is obscured and reprocessing does not restore visibility).
- e) HCW should take care not to touch their eye protection. If they touch or

adjust it, they must immediately perform hand hygiene.

Type of PPE	Measure	Description
Face shield used by health workers	Extended use (for use on multiple patients). A face shield must be designed to cover the sides of the face and below the chin.	The use without removal during the shift when caring for a cohort of patients with COVID-19
	Reprocessing	Clean face shields with soap/detergent and water followed by disinfection using either sodium hypochlorite 0.1% (followed by rinsing with clean water) or 70% alcohol wipes



# Gloves



# Gloves Types

## **1- Sterile:**

Mostly used for surgery they are disposable, sterile, and individually wrapped items.

## **2- Non-sterile:**

Disposable single use gloves (e.g., latex gloves) and usually not individually wrapped. They are used to protect against direct exposure to blood or other body fluids and prior to contact with contaminated equipment or surfaces.

## **3- Utility gloves:**

Are used for handling contaminated items and waste and performing environmental cleaning activities. They can be reused after decontamination but they should be discarded when punctured or torn.

# Gloves

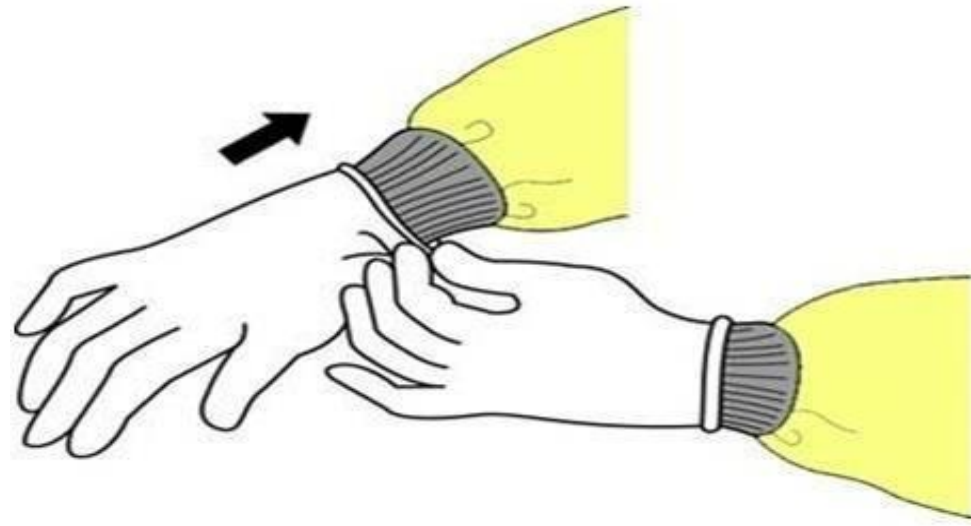
## Indications:

- a. Before a sterile procedure
- b. When anticipating contact with blood or another body fluid, regardless of the existence of sterile conditions and including contact with non-intact skin and mucous membrane
- c. Contact with a patient (and his/her immediate surroundings) during contact precautions.

# Gloves

## How-to Put-on Gloves:

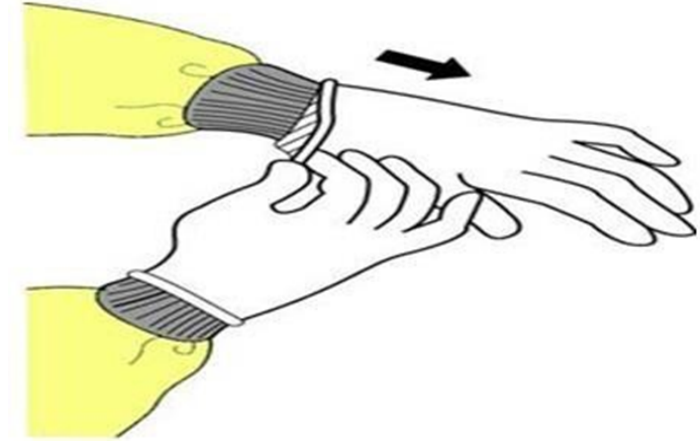
- Put on gloves last.
- Select correct type and size.
- Insert hands into gloves.
- Extend gloves over isolation or sterile gown cuffs.



# Gloves

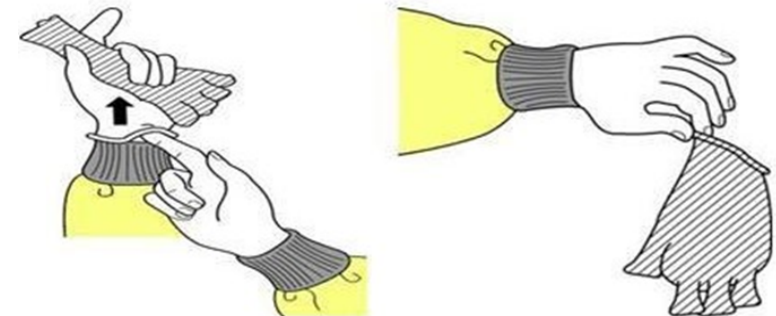
## Step 1: How to Remove Gloves :

- Grasp outside edge near wrist
- Peel away from hand, turning glove inside-out
- Hold in opposite gloved hand.



## Step 2: How to Remove Gloves :

- Slide ungloved finger under the wrist of the remaining glove.
- Peel off from inside, creating a bag for both gloves.
- Discard.
- Perform hand hygiene.



# How to Safely Don, Use, and Remove PPE

## □ Key Points About PPE:

- **Before donning** PPE you should perform hand hygiene.
- **Use carefully** – **don't** spread contamination.
- **Remove and discard** carefully.
- **Immediately perform** hand hygiene.

# Sequence for Donning PPE

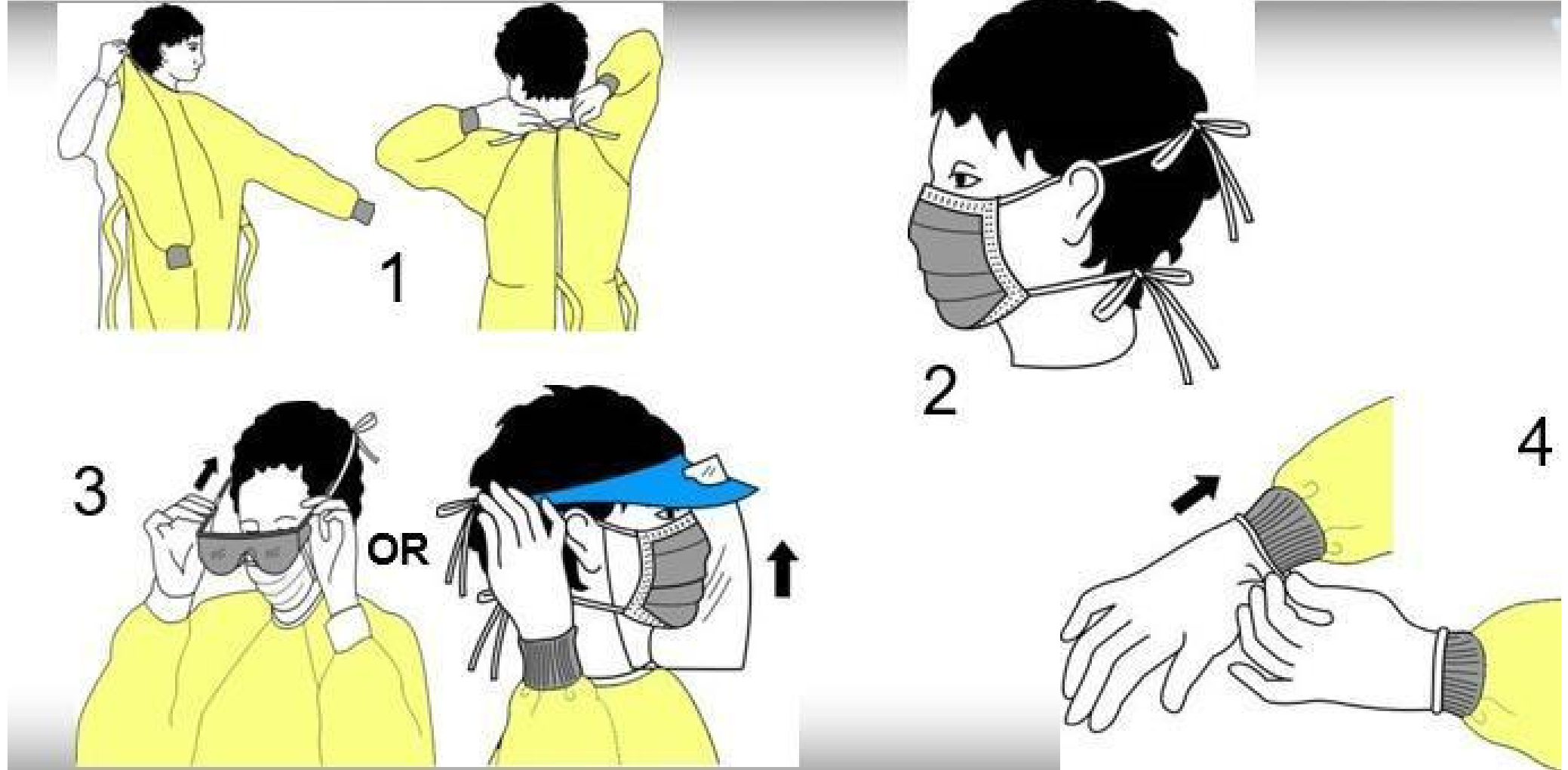
1. Gown first.(If gown is too small, use two gowns
  - Gown #1 ties in front
  - Gown #2 ties in bac
2. Mask or N95 respirator.
3. Goggles or face shield.
4. Gloves.



# SEQUENCE FOR DONNING PPE



# Sequence for Donning PPE



# How to Safely Remove PPE

Contaminated Areas of PPE	Clean Areas of PPE
<ul style="list-style-type: none"><li>? Contaminated – <b>outside front</b>.</li><li>? Areas of PPE that have or are likely to have been in contact with body sites, materials, or environmental surfaces where the infectious organism may reside</li></ul>	<ul style="list-style-type: none"><li>? Clean – <b>inside, outside back</b>, ties on head and back.</li><li>? Areas of PPE that are not likely to have been in contact with the infectious organism</li></ul>

## Sequence for Donning PPE

1. Gloves
2. Face shield or goggles
3. Gown
4. Mask or N95 respirator.

**Gloves (inside patient room)**

**Hand**

**hygiene**

**Goggles (if worn,  
inside patient room)**

**Hand hygiene**

**Gown/apron  
(inside patient**



5

Cap (if worn)

6

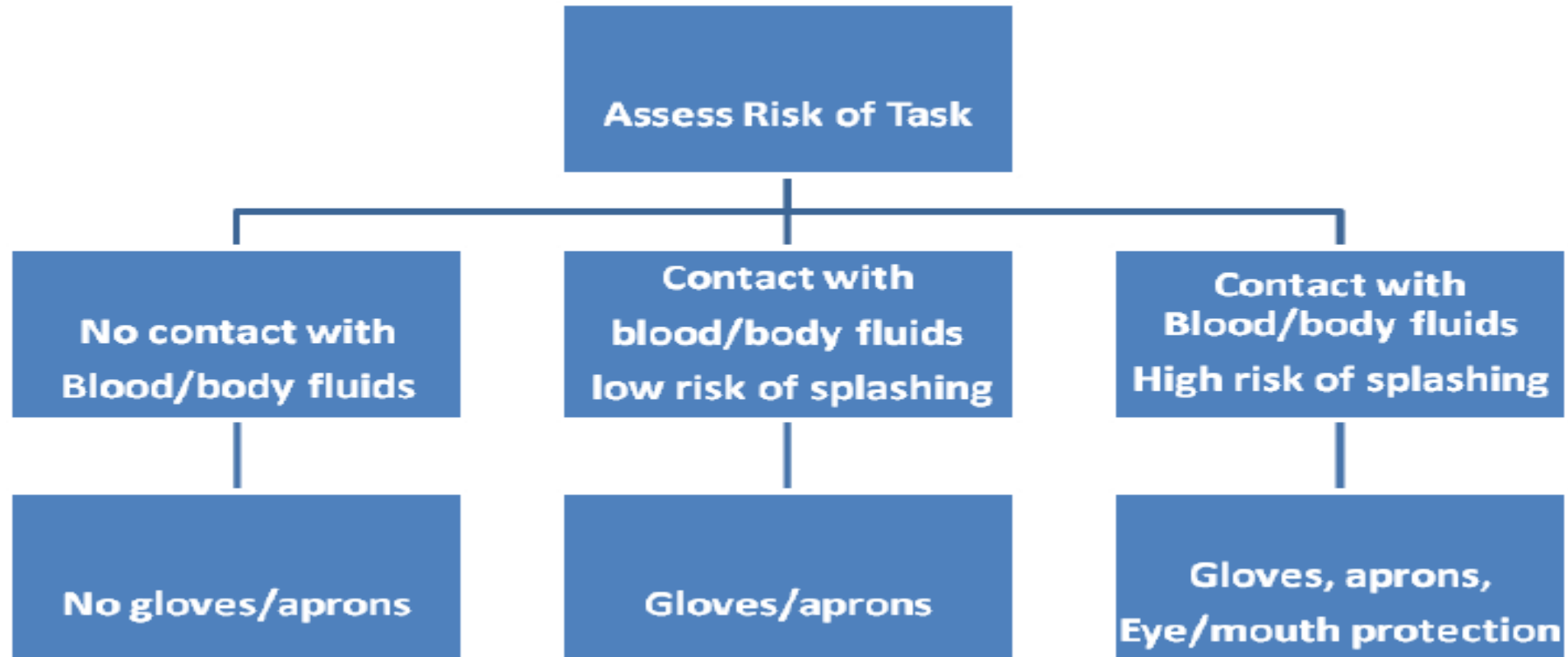
Mask (remove outside patient room)



## Sequence for Removing PPE



# Risk Assessment for use of PPE





## Principles of Safe removal of PPE:

Safe removal of PPE to protect health care workers, patients, and environment from exposure to contaminated materials. To remove PPE safely, you must first be able to identify what sites are considered “clean” and what are “contaminated”.

## Recommendations for PPE

**Ensure that PPE is:**

Safely dispose of personal protective equipment in the right place and in the

right way.

## References

- BICSL Guidelines
- CDC Guidelines
- GCC
- JCI / Saudi Arabia Infection Prevention and Control Diploma Course.

# Thank You

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